

ABSTRACT

An object of the present invention is to provide a honeycomb structural body which makes it possible to prevent a thermal stress from concentrating on plugs for sealing a group of inlet-side through holes and the vicinity thereof during a regenerating process, and consequently to prevent occurrence of cracks. The honeycomb structural body of the present invention is a pillar-shaped honeycomb structural body mainly made of porous ceramics, in which a plurality of through holes are placed in parallel with one another in the length direction with a partition wall interposed therebetween. Herein, the through holes are constituted by a group of inlet-side through holes, whose ends are sealed by plugs at the outlet side such that the total sum of areas on cross sections perpendicular to the length direction is made relatively greater, and a group of outlet-side through holes, whose ends are sealed by plugs at the inlet side such that the total sum of areas on the cross sections thereof is made relatively smaller. Supposing that the aperture rate on the inlet side is X (%) and that the total sum of thermal capacities of the plugs which seal the group of inlet-side through holes at 500°C per 11.8 cm² of the end face on the outlet side containing the group of the outlet-side through holes is represented by Y(J/K), the relationship indicated by the following inequalities (1) and (2) is satisfied.

$$0.0157X - 0.0678 < Y < 1.15X - 5 \quad \dots (1)$$

$$35 \leq X \leq 60 \quad \dots (2)$$